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ABSTRACT

A model project at Indian Hills Community College, Ottumwa, Iowa, provided a degree-bearing second-year course of vocational study to a nontraditional audience seeking high-technology training. The flexible, competency-based program offered three paths of study: a course in personal computing resulting in a diploma or an associate degree, an Associate of General Studies degree in Advanced Technology, and courses to be taken for skills upgrading/enhancement. The program was designed to use flexible study time, laboratory time, industry representatives, educational facilitators, and other college personnel in an innovative way. It was conducted during evenings to ensure accessibility. From summer of 1990 through spring of 1991, 73 students (68% female) participated in the program, 13 more than initially targeted. Of the 15 students who graduated during this time, 8 found employment in a related field, 5 found unrelated employment, and 2 continued their training. Costs per student were approximately $5,000. The project required input from a project supervisor, a project coordinator/secretary, a matriculation specialist, educational facilitators, and release instructors. (Appendixes, which make up more than one-half the report, include dissemination material--outreach letters, program brochures, newspaper advertisements, and a dissemination workshop agenda--and an external evaluator's report.) (KC)

# COOPERATIVE DEMONSTRATION PROGRAM FOR HIGH TECHNOLOGY TRAINING

# PERFORMANCE REPORT



**a project of**

**Indian Hills Community College**
**Ottumwa, Iowa**
"Where People Master Technology"

Partially Funded (66%) by a Cooperative Demonstration grant from the U.S. Department of Education

# INDIAN HILLS COOPERATIVE DEMONSTRATION PROGRAM
# (V199A00095)

January 1, 1990
through
June 30, 1991

PROGRAM FUNDING
"COOPERATIVE DEMONSTRATION PROGRAM (HIGH TECHNOLOGY)"
In the Amount of $302,012. (66% of total)

FUNDING AGENCY
OFFICE OF VOCATIONAL and ADULT EDUCATION
U.S. DEPARTMENT OF EDUCATION

PERFORMANCE REPORT
COMPLETED
OCTOBER, 1991

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## INTRODUCTION

### Institutional/Area Overview

Indian Hills Community College (IHCC) is one of the fifteen regional community colleges established in Iowa in the late 1960's. Serving the ten Southeast Iowa counties in Merged Area XV of Appanoose, Davis, Jefferson, Keokuk, Lucas, Mahaska, Monroe, Van Buren, Wapello and Wayne, the college's emergence and importance in this economically depressed area is the direct result of the institution's history of meeting the area's needs. (See Figure 1, page 2).

The Economic Development Administration has identified the region as an Economic Development district, reflecting a range of unemployment of 6.2 to 11.9 percent and a low income population of 18 to 20 percent of the region's total population of 150,522 in 1987-88.

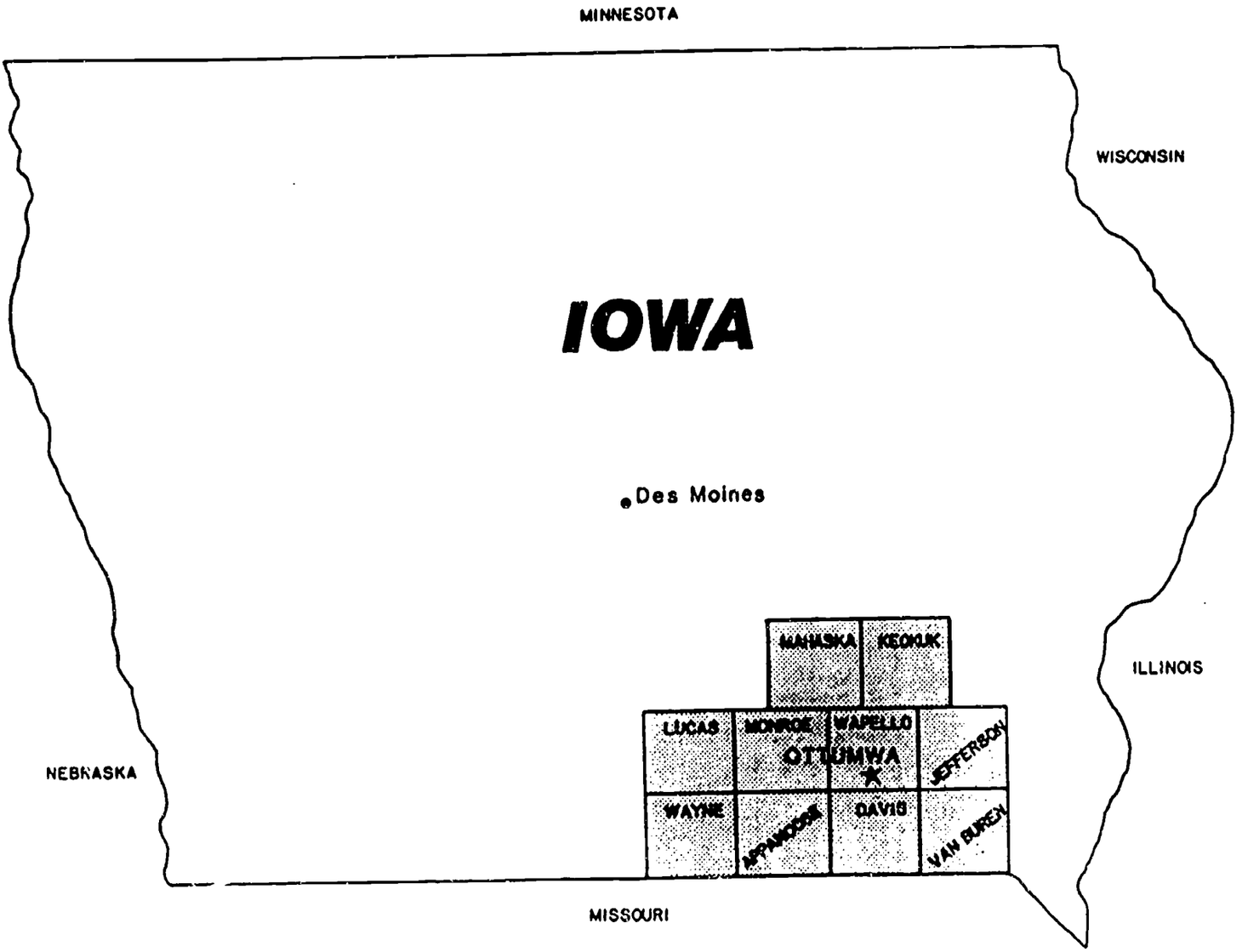
The economic decline has spurred out-migration from Area XV. United States Census reports show Ottumwa, our region's largest city, ranks sixth nationally in percent of population loss through the 1980's.

**U.S. CITIES WITH POPULATIONS OF 30,000 TO 35,000 IN 1950 AND THEIR POPULATION DECREASE THROUGH 1980**

| | | 1950 | 1980 | PERCENT NEG.CHG. |
|---|---|---|---|---|
| 1. | AMSTERDAM, NY | 32,240 | 21,872 | 32.1 |
| 2. | CLARKSBURG, WV | 32,013 | 22,371 | 30.1 |
| 3. | NEWPORT, KY | 31,044 | 21,587 | 30.0 |
| 4. | WILKINSBURG, PA | 31,418 | 23,669 | 24.6 |
| 5. | WATERTOWN, NY | 34,350 | 27,861 | 18.8 |
| 6. | OTTUMWA, IA | 33,634 | 27,381 | 18.5 |

This exodus of Iowans out of our region continues, as members of all non-elderly age groups decline in numbers.

# FIGURE #1
# INDIAN HILLS COMMUNITY COLLEGE
# MAP OF COLLEGE SERVICE AREA



Employment Training Needs

The training needs in Area XV are twofold. There is a great need for additional training for women and minorities needing to find and secure productive employment. At the same time, business and industry in our ten counties have specialized needs to be met in order to hire the most productive employees. In effect, this situation necessitates a "three-way partnership" between the college, its students and the industries in the region.

The first need to address is that of the non-traditional student. As the face of business and industry changes and becomes more high technology-oriented, there arises the need for workers and potential employees to gain additional skills and/or upgrade current levels of expertise. These students--many of whom work during the day--need a flexible, evening hour program of learning that results, at the very least, in an improvement of knowledge and skill. Moreover, the possibility of earning a degree is important, as the achievement carries with it the possibility of advancement in the working world.

The changing population of workers--single parents, displaced homemakers and others seeking advancement opportunities--needs to be addressed through training in marketable fields that relate directly to the needs of business and industry. That training has to be flexible and student-oriented.

Businesses in Area XV also have training needs. Specifically, industry leaders have expressed the need for workers well-versed in the basics and possessing specialized skills in diverse areas of operation. Furthermore, they have expressed the need for skilled women in the work place. There are many industries in the ten-county area, but being rural in nature, plants are small enough in size to require workers who are prepared to handle a variety of situations. For example, an employer may need someone who can program a Personal Computer system and also repair it if it breaks down.

Again, training is the key. Industry representatives need to be hands-on partners in the training process, helping to provide students (who may be current or potential employees) with information on beneficial course work. Once again, the training is more beneficial if it is flexible, competency-based and degree-bearing, - tailored to the non-traditional student.

Evidence of Current and Projected Occupational Need

The vocational programs at Indian Hills are developed and implemented successfully with the help of industry representatives. Those members of the private sector serve on advisory committees to our programs. Each advisory committee (one for every vocational program) meets quarterly to review curriculum, occupational needs, quality of program graduates, placement of graduates and the overall quality of the program. The college places much emphasis and responsibility on these committees. The awards garnered by IHCC advisory committees attest to their excellence:

- Outstanding Advisory Committee in Iowa (Computer Maintenance, 1987)
- Presidential Commendation for Advisory Committees, U.S. Department of Education (Computer Maintenance, 1987)
- Outstanding Advisory Committee in Iowa (Computer Programmer/Analyst, 1988)
- Outstanding Advisory Committee in Iowa (Radiologic Technology, 1989)

The college's High Technology Advisory Committee has studied the need for more flexibility in the program over a two-year period. The findings are clear; current offerings do an excellent job of meeting the needs of industries utilizing larger, main-frame computers, and the offerings meet the needs of traditional students who are academically prepared to study diligently for two years with the goal of obtaining an Associate of Applied Science degree in a High Technology area.

There were, however, needs that were unmet, too. Our smaller industries had suggested a need for employees with varied yet specific technical skills in order to cope with the diversity of duties at a plant in a rural setting. This demonstration grant spoke directly to this need, as it utilized a true partnership with area industries, having advisors from the private sector counsel students on how to tailor programs of study to suit the specific need of local industry. An outcome of study under this program can be an Associate Degree in Applied Technology.

Moreover, the Personal Computer (PC) market is expanding, and is the growth area in industries in our region. These industries are smaller in size than their urban counterparts and employ local people. The project we proposed also spoke directly to these needs. An outcome of study under this program can be a diploma or associate degree with a concentration in personal computing.

## PROGRAM DESCRIPTION

Our model project provided a degree-bearing second year course of vocational study to a non-traditional audience seeking High Technology training. The flexible, competency-based program offered the opportunity for skill enhancement and a college degree to successful completers. The project also offered three paths of study:

1. A course of study in Personal Computing resulting in a diploma or an associate degree;
2. An Associate of General Studies (AGS) degree in Advanced Technology, specifically tailored to meet student and industry needs and;
3. Courses to be taken for skills upgrading/enhancement.

See Appendix A for curriculum descriptions.

The program was designed to utilize flexible study time, lab time, industry representatives, educational facilitators and other college personnel in an innovative way. It was conducted during evenings to ensure accessibility by the groups which we targeted. It was specifically designed to result in increased efficiency and cost-effectiveness for area industries and skill and employability enhancement for employees and potential employees. Because the project matched students with industry advisors, it pre-matched prospective graduates with interested employers, opening possibilities for part-time trial employment to the mutual benefit of student, employer and school. This approach encouraged in-area placement of high technology graduates. This project offered students the opportunity to design a degree program made up of a combination of interdisciplinary courses, yet technically-focused to meet "real world" needs.

The project -- following the initial six-month development, outreach and student assessment period -- featured three (3) educational components, each twelve (12) months in length. All three were evening hour, flexibly scheduled, facilitated programs:

### Microcomputer Specialist Diploma

This component was a 24 semester hour offering in Personal Computing. This component was utilized as a one year program for students seeking proficiency in microcomputer software applications and resulted in a diploma. This offering, when combined with an Electronics/Computer Occupations diploma from our traditional offerings could also result in an Associate of General Studies (AGS) in Advanced Technology degree.

AGS In Advanced Technology

This component was a second year degree-bearing program in high technology. The first year of training was obtained by the student completing the Indian Hills Community College (IHCC) Electronics/Computer Occupations diploma program through the traditional curriculum at some point prior to starting the AGS program.

Utilizing the AGS program, students would choose from a variety of course options. With the assistance of an academic advisor and an advisor from the ranks of area industry, the students tailored an AGS program that combined High Technology courses and credits from other disciplines, specifically gearing student skills to suit the needs of area industries.

The program featured flexibility and course selection suited to the individual. A student's AGS in Applied Technology plan was subject to IHCC Academic Standards Committee approval prior to the start of course work.

Course-by-Course Upgrade

This component was available to train adults in second year High Technology programs on a course-by-course basis while accumulating college credit.

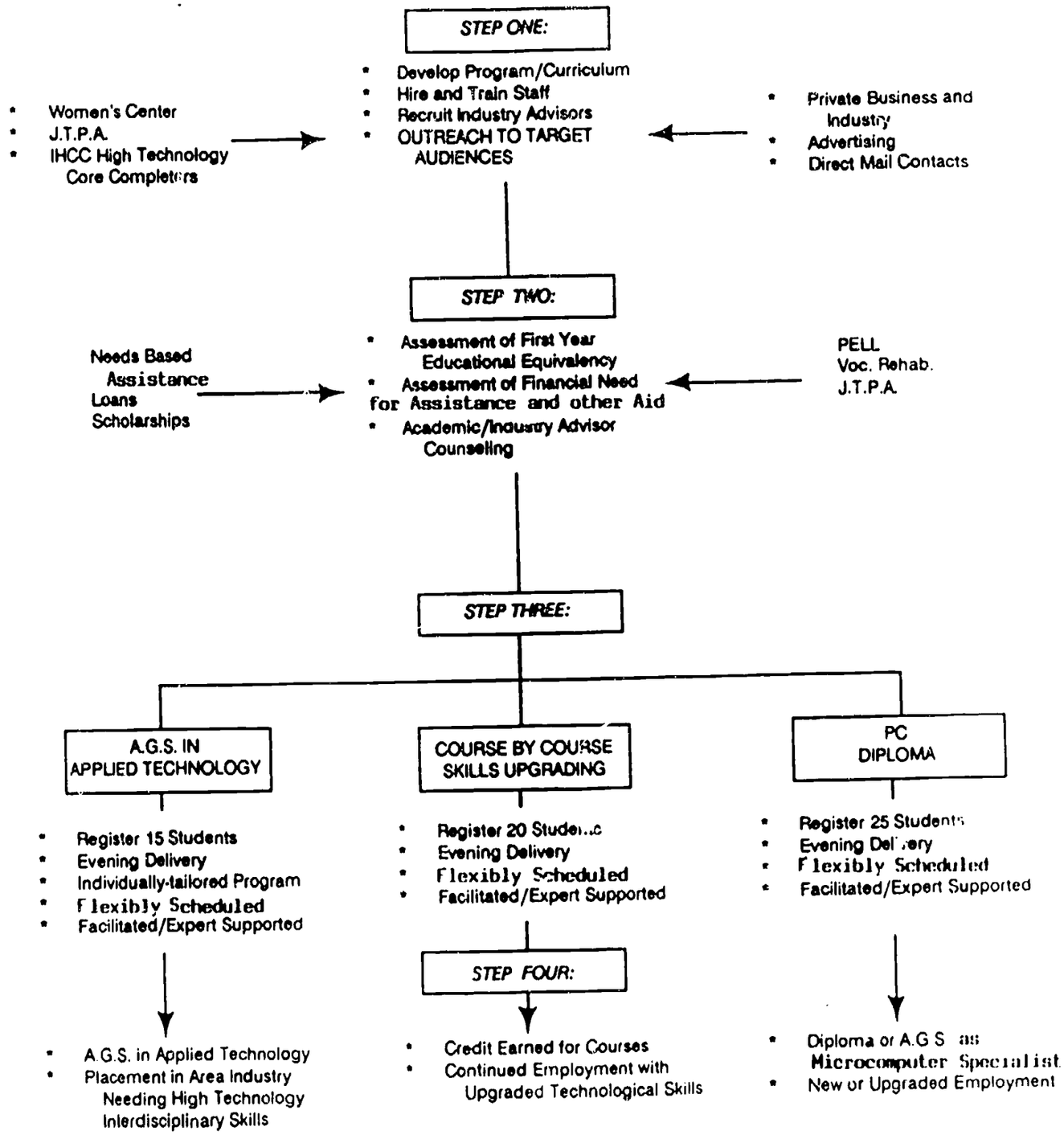
The courses offered will allow current employees of industry to upgrade skills or train for new responsibilities that would enhance their mobility and productivity on their current jobs. Nurses, for example, might want or need laser safety training, or a working machinist could upgrade knowledge and skill by taking a course in Industrial Circuit Design.

Again, the non-traditional, facilitated delivery of these credit-bearing courses offer students ultimate flexibility in scheduling and completion.

In summary, during the conduct of all of these components, eight (8) industry volunteer advisors were enlisted on an as needed basis to assist the college's matriculation specialist in helping the students customize their AGS programs. This concept truly made area industry a "hands-on partner" in this model effort.

In addition, eight current IHCC instructors/specialists were utilized as "experts" to assist students in understanding High Tech specialty concepts. These experts were utilized for four hours per week each, serving to supplement the full-time educational facilitators during the non-traditional delivery hours. The overall project design flow diagram is shown in Figure 2, page 7.

# FIGURE #2
# INDIAN HILLS COMMUNITY COLLEGE
# PROJECT DESIGN



## STUDENTS SERVED

The intended audience served by this grant was well defined in advance. The targeted audience was specified in the grant process objectives as:

- Outreach efforts to 200 potential program participants
- Register 25 and graduate 15 students in the Microcomputer Specialist Diploma component
- Register 15 and graduate 12 students in the AGS in Advanced Technology component
- Register 20 and have 20 students complete at least one course in the course-by-course component
- Of the total number of participants, at least 66% shall be women (40 of 60 projected)

The outreach efforts provided contact with 549 potential participants. These contacts were made by letters (see Appendix A), phone calls, personal contacts, and Career Directions Workshops sponsored by the IHCC Sex Equity Coordinator.

The actual numbers registering were greater than projected in some components and less in others. However, the overall total of registrants exceeded the original goals. The actual number of graduates/completers was less than anticipated in all components. See Figure 3 on page 9 for actual numbers.

Several students pursuing the Diploma option (11) did not complete their required course work before the end of the grant. However, they were able to continue their work beyond the grant period.

Also, all of the 46 students that started the Microcomputer Specialist diploma program completed at least one or more courses and benefited accordingly.

A summary of the number of students served during each term is given in Figure 4 on page 10 The summer term of 1990 was somewhat limited due to initial start up efforts. Enrollments during the Fall, Winter, and Spring terms were near expectations.

During the Spring term of 1991, permission to incorporate the Microcomputer Specialist Diploma program was obtained from IHCC management. This program has since been delivered on both the Ottumwa and Centerville campuses of IHCC. Summer term enrollment for Ottumwa was 18 students (eleven continuing their work from previous terms) and for Centerville it was an additional 18 new students with 10 more on a waiting list. This is rapidly becoming a very popular offering.

Figure #3
INDIAN HILLS COMMUNITY COLLEGE
COOPERATIVE DEMONSTRATION PROGI ~i1
PROJECTED AND ACTUAL STARTERS/COMPLETERS BY COMPONENTS

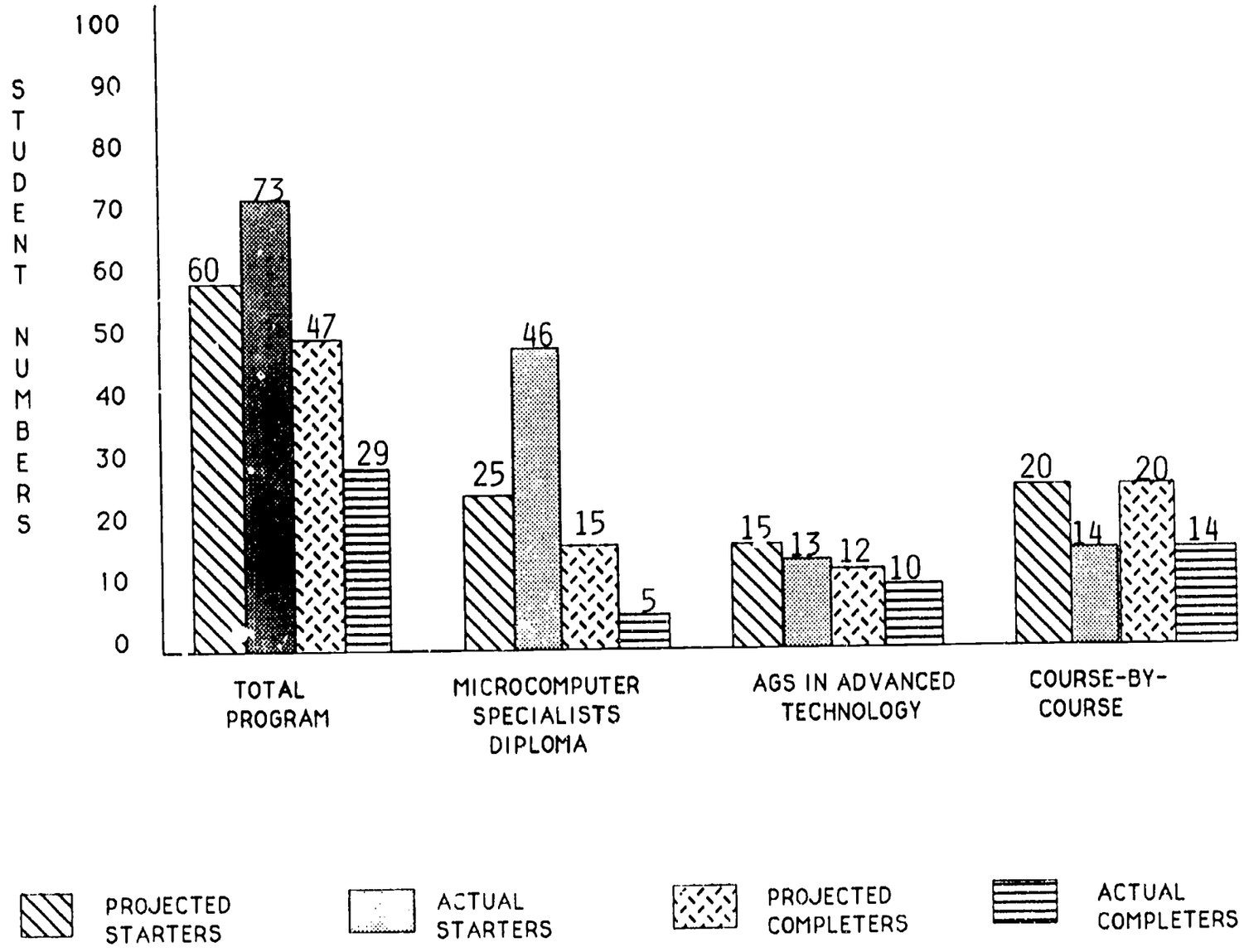
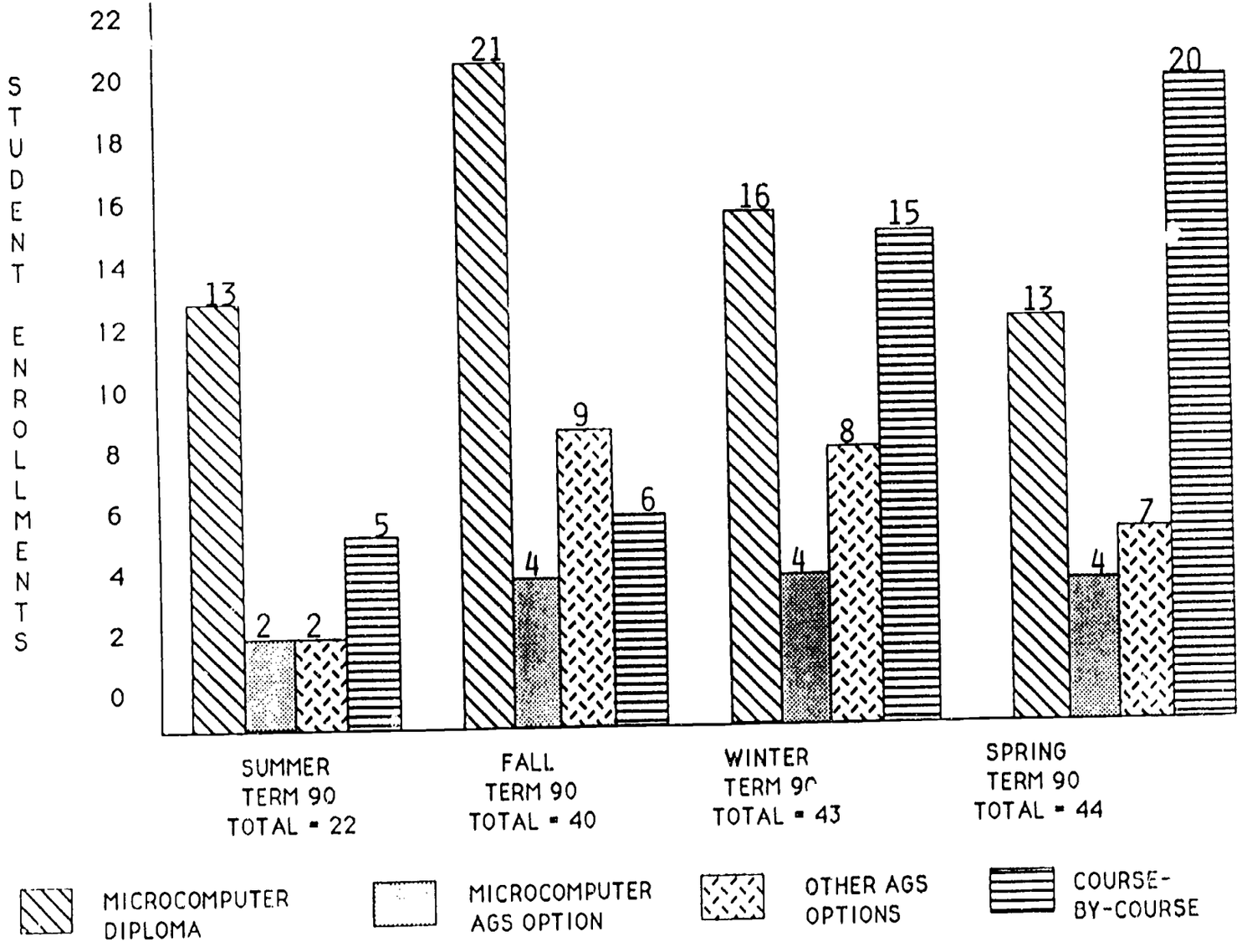


Figure #4
INDIAN HILLS COMMUNITY COLLEGE
COOPERATIVE DEMONSTRATION PROGRAM
NUMBER OF STUDENTS ENROLLED BY COLLEGE TERM



Overall, from Summer term of 1990 through the Spring term of 1991, the total number of different, individual students taking advantage of this Cooperative Demonstration program was 73, thirteen more than initially targeted.

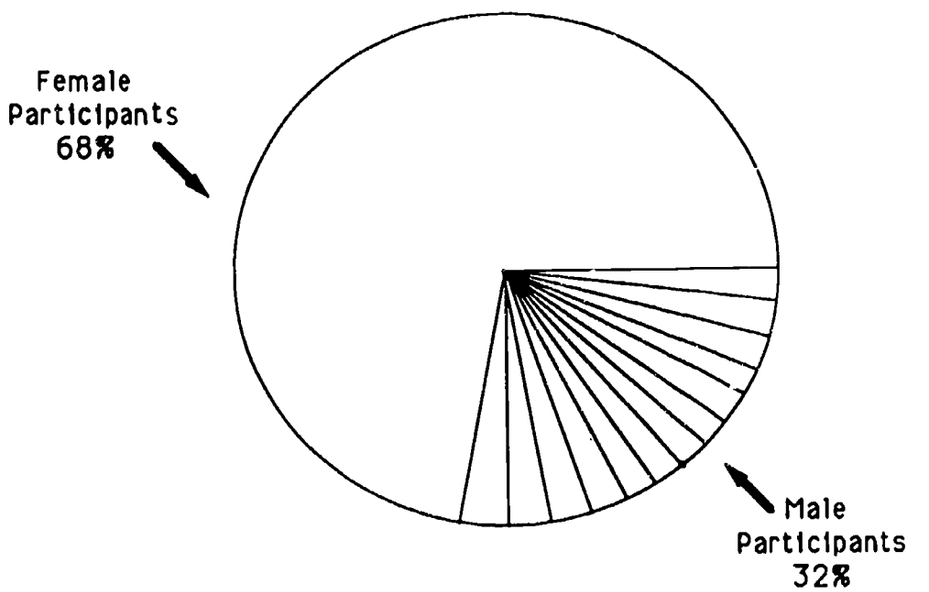
The results of the process objective speaking to gender balance is shown in Figure 5 on Page 12.

Summary data concerning graduate employment is as follows:

| Program | Number Graduating | Number Employed Related | Unrelated | Continued Training |
|---|---|---|---|---|
| Microcomputer Specialist Diploma | 5 | 3 | 2 | 0 |
| Microcomputer AGS | 4 | 3 | 1 | 0 |
| Other AGS | 6 | 2 | 2 | 2 |
| | 15 | 8 | 5 | 2 |

All 14 course-by-course participants were previously employed and continue in that employment.

Figure #5
INDIAN HILLS COMMUNITY COLLEGE
COOPERATIVE DEMONSTRATION PROGRAM
STUDENT PARTICIPANTS BY GENDER




Note: The total number of different individuals (students) participating through the life of the grant was 73 (the number these percentages are based on).

## REPLICATION POTENTIAL

Both the goals and the process of this project should be replicable with only local adaptations required.

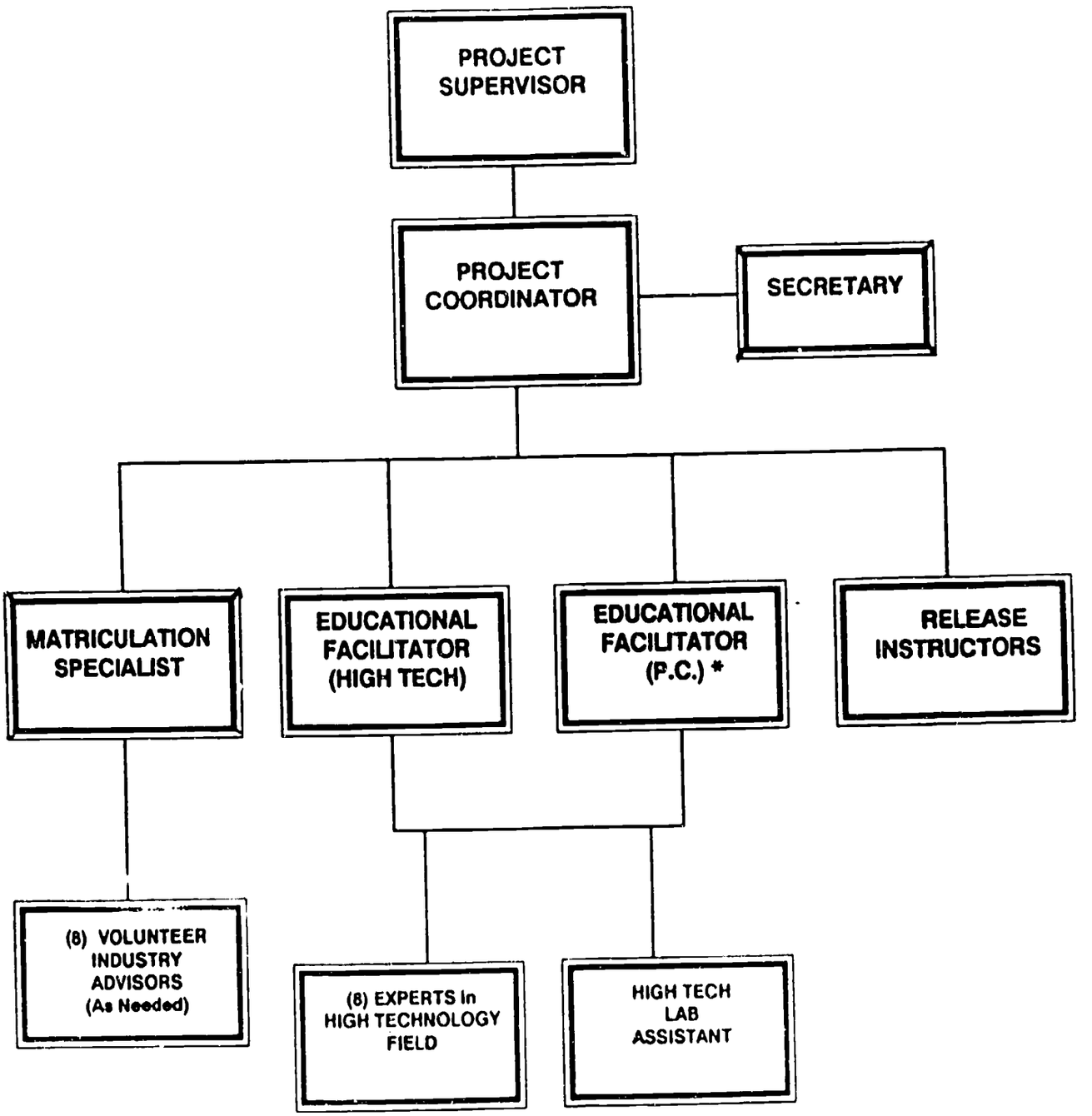
We were very pleased with the management model implemented for the project (see Figure 6, page 14). For clarity, a brief description of the duties of each position will be given.

- **Project Supervisor:** Oversight functions to ensure institutional, state, and federal guidelines were observed
- **Project Coordinator/Secretary:** Day-to-day management and budgeting of the project
- **Matriculation Specialist:** Worked with the students, the industry advisors, and the college Academic Standards Committee to determine the appropriate course work for the Associate of General Studies in Advanced Technology programs as well as provide general guidance and counseling for all students
- **Educational Facilitators:** These were key positions relative to the success of the project. Facilitators, in this context, are very knowledgeable in a wide range of technical subjects and are certified instructors in their own field. Their function is to work with the students guiding and motivating them through their course work. Also when particularly difficult or esoteric subjects are encountered or where several students all need additional help as a group, the subject matter experts are scheduled, on an hourly basis, by the facilitator.
- **Release Instructors:** Release instructors were hired prior to student enrollment to release our regular staff so that they could modify our existing competency based courses such that they were more amenable to flexibly scheduled, facilitated delivery. Also, some new courses were created specifically for this project.

One caution regarding the flexible scheduling. In this approach the students time is flexible allowing them to put in their contact hours at convenient times based on work schedules or child care, etc. However, the students must start and complete their required contact hours in accordance with the college term calendar. For this reason, it is important that good time management on the part of the students and consistent motivation on the part of the facilitator be foremost in the minds of all. Figure 7 on page 15 graphically indicates the tendencies.

One of the primary advantages to the facilitated approach is that it becomes cost effective to enroll only a few students in a given academic program. That is, fifteen or twenty students could be pursuing several different academic program goals at the same time rather than all being required to pursue the same goal at the same time in order to have enough enrollment to warrant conducting a class.

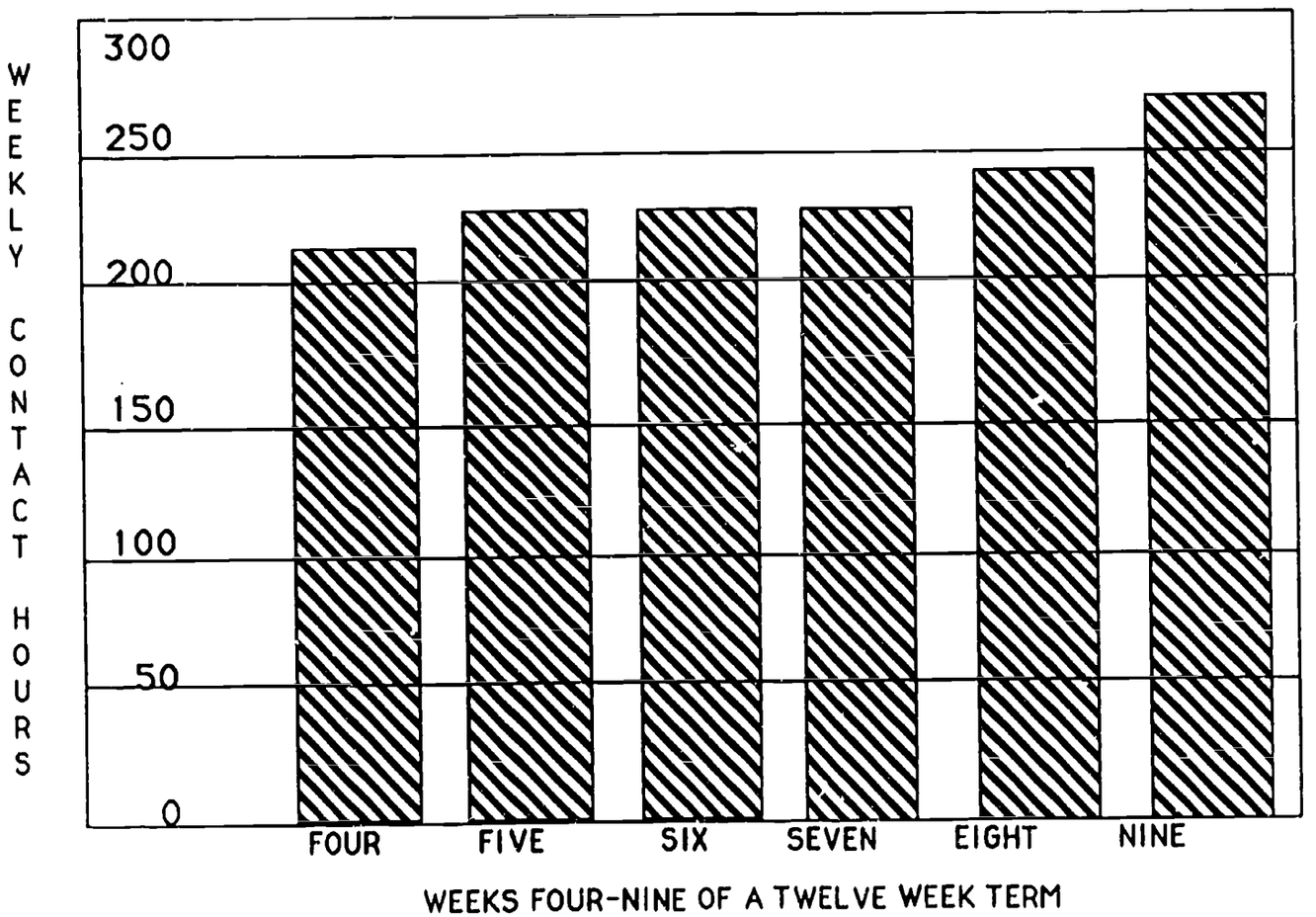
# FIGURE #6
# INDIAN HILLS COMMUNITY COLLEGE
# PROJECT MANAGEMENT MODEL




* Microcomputer Specialist

Figure #7

# INDIAN HILLS COMMUNITY COLLEGE
# COOPERATIVE DEMONSTRATION PROGRAM
# NEED FOR TIME MANAGEMENT




NOTE: The total contact hours of all of the students enrolled in a class charted over time indicates a procastination factor which needs to be managed.

## DISSEMINATION

Efforts regarding dissemination of this project have occurred throughout the life of the grant.

In the early phases, January 90-May 90, advertisements were placed in several area newspapers, brochures were distributed and posted by area industries, and all IHCC administrators and departments were notified of the enrollment procedures and opportunities made available through the grant. In January of 1990 an article was published in COMMUNITY COLLEGE WEEK.

In October of 1990 an Information Dissemination Workshop was held at IHCC for area business and industry representatives as well as internal IHCC administrators and faculty.

Brochures were distributed at the AACJC National Convention in Kansas City during April, 1991. See appendix A for sample materials used in these efforts.

## EVALUATION

Dr. Chet Rzonca, Chair; Planning, Policy, and Leadership at the University of Iowa, Iowa City, served as the external evaluator for this project. His final report is located in Appendix B.

It must be noted that after Dr. Rzonca's external evaluation was completed, seven additional students were identified from the matriculation specialist's records. Thus, when the external evaluator's Final Report speaks of 66 students enrolled and this performance report speaks of 73 students enrolled, it is this enrollment report which reflects the actual numbers. Our apologies for any inconvenience this may cause the reader.

The unit (per student) costs are summarized below.

**Proposed Project Costs:**

| | | |
|---|---|---|
| Authorized Federal Funding | $303,012 | 66% |
| Local Match Indicated (Non-Federal/In Kind) | 156,667 | 34% |
| | $459,679 | |

**Actual Project Costs:**

| | | |
|---|---|---|
| Federal Funding Expended | $242,308 | 62% |
| Local Match Expended (Non-Federal/In Kind) | 147,170 | 38% |
| | $389,478 | |

Note: Recipient Cost Share Required was 25%.

**Cost Per Student**

Total Expenditures: $389,478 / Number Students Served: 73 = $5,335/student

Federal Expenditures Only: $242,308 / Number Students Served: 73 = $3,319/student

The lower than expected expenditures of the grant resulted primarily from the lower than expected needs based assistance.

## APPENDICES

APPENDIX A - Dissemination Material

- Outreach Letters
- Instructional Program Brochures
- Newspaper Ads
- Dissemination Workshop

APPENDIX B - External Evaluator Report

## APPENDIX A

## DISSEMINATION MATERIAL

# Indian Hills
## community college

April 19, 1990

^F1^ ^F2^
^F3^
^F4^, ^F5^ ^F6^

Dear ^F1^,

As part of a federal grant award Indian Hills Community College recently established a special Demonstration Project which allows flexible evening training in Advanced Technologies.

This project will offer an evening schedule at IHCC in the High Technology Building. Through this grant three avenues of study will be available: individually tailored AGS Degrees in Advanced Technology, course by course technical skill upgrading, or a certificate in Personal Computing.

Vicki Brown, Sex Equity Coordinator/Counselor, suggested you might be interested in one of these programs. If you are interested we would like to visit with you. We invite you to phone for an appointment at your convenience at 515/683-5201 or 1-800/362-2585 extension 201, Mondays through Thursdays 7:15 A.M. to 8:30 P.M.

We appreciate your interest and look forward to hearing from you.

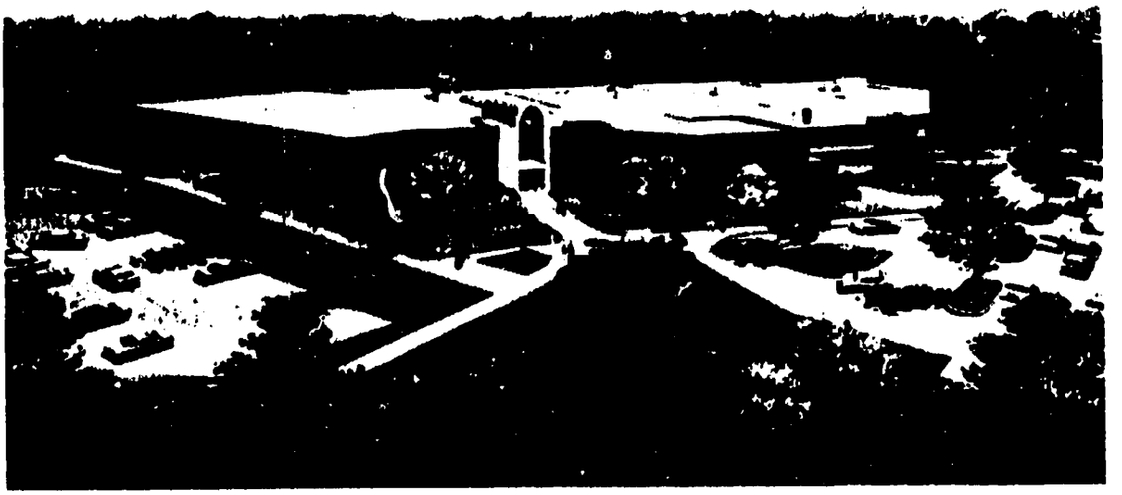
Sincerely,

Brenda Ragen
Matriculation Specialist

BR:sb

P.S. Participants may apply for financial assistance through normal college sources (JTPA, PELL, Voc Rehab, scholarships) as well as special needs-based allowances for this grant.

# ADVANCED TECHNOLOGY EVENING CREDIT COURSES



**Indian Hills Community College**
**ADVANCED TECHNOLOGY CENTER**

**"Where People Master Technology"**

## INDIAN HILLS COMMUNITY COLLEGE

**Ottumwa, Iowa 52501**
**Phone: (515) 683-5201 or toll free 1-800-726-2585**

# NEW OFFERINGS FEATURING...

**Evening Hours...**
Persons working during the day or on an irregular schedule will be able to enroll in evening classes.

**Independent Study...**
Most of this course work will be facilitated and self-paced, greatly increasing the flexibility of the program.

**New "Advanced Technology Center"...**
Students will complete their training in our new state-of-the-art $6.5 million "Advanced Technology Center" -- one of the largest community college facilities in the nation.

**Industrial Equipment...**
Because of "hands-on" training with industrial equipment, many employers consider our graduates to have the equivalent of six months of on-the-job training.

**Credit Toward AAS Degrees...**
Credits earned by completing Advanced Technology courses can be applied to an Associate of Applied Science (AAS) degree in Robotics/Automation, Laser/Electro-Optics, Electronics/Telecommunications, or Computer Systems/Networks.

This project is partially funded (67%) by United States Department of Education Cooperative Demonstration Grant #V199A[illegible] in the amount of $303,[illegible]12

# MICROCOMPUTER SPECIALIST CERTIFICATE

This is a 21 semester-hour program in the use of Personal Computers. This option can be utilized as a first year program for students seeking proficiency in the latest software applications. Graduates will receive a certificate. It can also be a second year program for individuals who have completed our Electronics/Computer Occupations CORE curriculum and are seeking an Associate of General Studies (AGS) degree in Personal Computing.

# MICROCOMPUTER SPECIALIST CURRICULUM

| | Credit Hours | |
|---|---|---|
| Data Processing | 3 | Overview of data processing industry, basic concepts, features and intro to application software of computers. |
| PC Design and Maintenance | 2 | Basic hardware configuration of microcomputers, methods for adding and updating peripherals. |
| PC Operating Systems | 3 | Commands, file management, editing, memory management, and customization of systems. |
| Network Design & Architecture | 2 | Topologies and hardware used in Local Area Networks, evaluation of networking needs. |
| Intro to CAD | 2 | Computer generated drawings, 3-D drawings, development of symbol library, customization of CAD programs. |
| PC Database Design | 2 | Database design using dBase IV, emphasizing data retrieval, manipulation, and report generation. |
| Word Processing | 3 | Automated word processing using microcomputers and WordPerfect software. |
| Spreadsheets | 2 | Spreadsheet design, macros, financial and statistical functions, graphics from spreadsheet data. |
| PC Fourth Generation Language | 2 | Theory and application of relational database design using fourth generation language |
| Programming Fundamentals Pascal | 3 | Design, construction, and correction of Pascal programs using business applications. |
| C Programming Language | 3 | Syntax, instructions, character and numeric data, coding and debugging of "C" language programs. |
| BASIC Computer Programming | 3 | Programming concepts and techniques utilizing BASIC, emphasizing business applications. |

# CUSTOM TAILORED AGS DEGREES IN ADVANCED TECHNOLOGY...

This is a second year program for students who have successfully completed our Electronics/Computer Occupations CORE curriculum and for those who have gained equivalent experience through another school (evaluated by transcript or testing). Upon completion of at least 24 credit hours of course work, a student will earn an Associate of General Studies (AGS) degree in Advanced Technology with an emphasis in a wide variety of specialty options.

## DESIGN YOUR DEGREE TO MEET THE NEEDS OF LOCAL INDUSTRY...

With the assistance of an academic advisor and an advisor from the ranks of area industry, the student can tailor an AGS program to meet the needs of area industries. Each student's individual AGS in Advanced Technology plan will be subject to IHCC Academic Standards Committee approval prior to the start of course work. Evening credit courses are listed in back of this brochure.

## Concentrate your training in ...

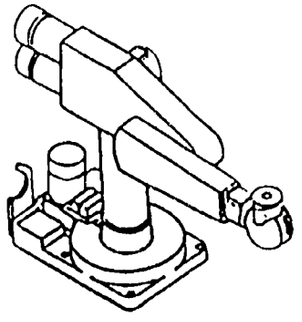
* AUTOMATED MANUFACTURING TECHNOLOGY
* PERSONAL COMPUTER PROGRAMMING
* BIOMEDICAL/LASER TECHNOLOGY
* PROCESS CONTROL TECHNOLOGY

PLUS MANY MORE POSSIBILITIES!!!

# INDIVIDUAL COURSES TO UPGRADE YOUR SKILLS...

This option offers adults college credit in second year Advanced Technology programs on an individual course basis. The evening courses offered will allow current employees of industry to upgrade skills or train for new responsibilities that would enhance their mobility and productivity in their current job.
* Evening credit courses are listed in back of this brochure.

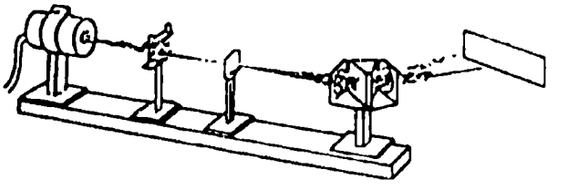
## INDIAN HILLS STUDENTS TRAIN ON THE LATEST EQUIPMENT NOW BEING IMPLEMENTED BY INDUSTRY...



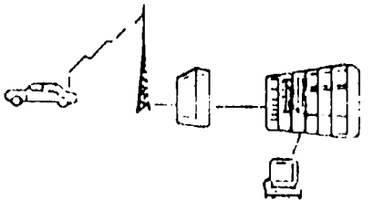
### ROBOTICS/AUTOMATION TECHNOLOGY

ESAB MAC-2000 Robotic Welding System
Automatix AID-800 Robotic Welding System
CYRO 750 Robotic Welding System
IBM 7535 Scara Robot
Unimate 250 Robot
Fairchild Machine Vision System
Allen-Bradley Programmable Logic Controllers (PLCs)

### LASER/ELECTRO-OPTICS TECHNOLOGY



Coherent 90-3 Water Cooled Argon Laser
Ion Laser Technology Air Cooled Argon Ion Laser
Coherent 250 Watt CW $CO_2$ Laser
Coherent Dye Laser
Laser Metrics CW ND:YAG Laser
Apollo Pulsed ND:YAG Laser
Monochromators, Interferometers, Spectrometers, Optics, Fiber

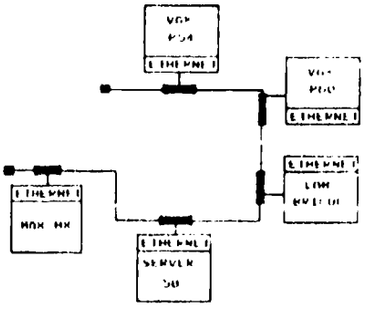


### ELECTRONICS/TELECOMMUNICATIONS TECHNOLOGY

Motorola Narrow Band FM Radios with DPL
JVC Broadcast Quality Color Cameras
JVC Broadcast Quality VCRs
RCA Cameras and VCRs
Kevex X-ray Energy Spectrometer
IFR Radio Service Monitor
Oscilloscopes, Vectorscopes, Spectrum Analyzers

### COMPUTER SYSTEMS/NETWORKS TECHNOLOGY

Digital Equipment Corporation VAX 11/750 Computer Systems
Digital Equipment Corporation PDP 11 Series Computer Systems
Data General Eclipse Computer System
Network Protocol Analyzer
DECnet and Ethernet Local Area Network
Diagnostics Software
VMS, RSTS, RT11 Operating Systems



## LASER/ELECTRO-OPTICS SPECIALITY COURSES

| | Credit Hrs | |
|---|---|---|
| **TERM V** | | |
| Introduction to Lasers | 4 | Theroy of operation, safety, basic light theory, and overview of laser industry |
| Light Sources & Wave Optics | 2 | Wave theory of light, units of light measurement, polarization, interference, light propagation. |
| Geometric Optics | 2 | Ray theroy of light, reflection and refraction in single and multiple lens configurations |
| Laser Electronics | 2 | Power supply and related equipment circuits analysis and troubleshooting techniques |
| Laser Components | 2 | Analyze requirements and specifications of equipment and hardware used with lasers. |
| **TERM VI** | | |
| Laser Technology | 4 | In-depth study of various laser systems, Q-switches, and output measuremments. |
| Laser/Electro-Optics Devices | 2 | Theory and experimental study of beam measurement and manipulation equipment. |
| Laser Applications | 2 | Study of various uses for lasers in medical, industrial, and military applications. |
| Fiber Optics | 2 | Theory and experimental operation of fiber optics and related equipment. |
| Occupational Communications | 2 | Goal setting, career planning, and business communications. |
| **TERM VII** | | |
| Laser Systems | 2 | Design and operation of a laser system to perform specified tasks. |
| Applied Optics Methods | 3 | Optical testing using interferometry, beam quality measurements, evaluating solid-state rods. |
| Laser Troubleshooting | 2 | Analysis of laser equipment problems and appropriate troubleshooting measures. |
| Laser Research Documentation | 2 | Library search for information, analyze information, and create a formal technical report. |
| Laser Projects | 2 | Individualized hands-on experience in laser measurement, fabrication, and calibration. |

## ELECTRONICS/TELECOMMUNICATIONS SPECIALITY COURSES

| | Credit Hrs | |
|---|---|---|
| **TERM V** | | |
| Modulation Techniques | 4 | Modulation and transmission systems including phase-locked loop & frequency synthesizers |
| Communication Receivers | 2 | Comprehensive coverage of communication receivers including circuit tracing and testing |
| Microelectronics | 3 | Bias stabilization of transistors, AC analysis of bi-polar and FET amplifiers, and Op-amps |
| Fabrication & Testing | 2 | Designing, building, and testing a semiconductor circuit project. |
| **TERM VI** | | |
| Satellite & Microwave | 4 | Satellite communication systems, microwave, radar theory and computations. |
| Imaging Techniques | 2 | Techniques ranging from closed circuit systems to conventional receiver/monitor systems. |
| Electronic Systems Analysis I | 3 | Experience with multicomponent electronic systems, circuit applications, and troubleshooting. |
| Occupational Communications | 2 | Goal setting, career planning, business letters and associated forms. |
| **TERM VII** | | |
| Linear Integrated Circuits | 2 | Op-Amps, IC regulated supplies, Norton amplifiers, and other analog integrated circuits |
| Optoelectronics/Fiber Optics | 2 | Optoelectronic devices, fiber connectors, modulation and demodulation techniques |
| Data Communications | 2 | Transmission media, communication standards and protocols, networks and carriers |
| Electronic Systems Analysis II | 3 | Troubleshooting systems using fiber optics, servomechanisms, RF to telephone diagnostics |
| Computer Aided Systems | 2 | Computer control and data reduction techniques using machine code, high level languages |

## COMPUTER SYSTEMS/NETWORKS SPECIALITY COURSES

| | Credit Hrs | |
|---|---|---|
| **TERM V** | | |
| Networking I | 2 | Architecture, topology, and protocols of LANs (DECnet, Novell), use of [illegible] analyzer |
| Systems/Network Software | 4 | Application and diagnostic software, system utilities, error logging utilizing DEC VAX/VMS |
| Central Processor Concepts | 2 | Central processor architectural concepts related to addressing, decoding and data flow |
| Field Service Techniques | 2 | Documentation and equipment used to troubleshoot electronic & electro-mechanical devices |
| Introduction to CIM | 2 | Networks, business and production components of Computer Integrated Manufacturing |
| **TERM VI** | | |
| Systems/Networks Lab I | 3 | Hardware, software, & communication link configurations of central processors & peripherals |
| Systems Power & Environment | 2 | HVAC and environmental process control, grounding, advanced DC supplies |
| Peripherals and Bus Structure | 4 | Interred and I/O bus structure, troubleshooting disc and tape drives, high speed line printers |
| Occupational Communications | 2 | Goal setting, career planning, business letters and associated forms. |
| **TERM VII** | | |
| Systems/Networks Lab II | 3 | Install, analyze, troubleshoot, and repair computer systems and networks |
| Networking II | 4 | Ethernet, broadband, and FDDI networks, fiber optics, troubleshooting, use of LAN analyzer |
| Advanced Systems Concepts | 4 | Integration of hardware, software, & telecommunication interfaces into network routing node |

# TRADITIONALLY DELIVERED TRAINING
# FULL TIME DAYS, BEGINNING EACH AUGUST AND FEBRUARY
# OR HALF-TIME NIGHTS, BEGINNING EACH FEBRUARY

## ELECTRONICS/COMPUTER OCCUPATIONS
## CORE CURRICULUM

| | Credit Hrs | |
|---|---|---|
| **TERM I** | | |
| Basic Electricity I | 4 | Electron theory; series, parallel, and series-parallel circuits applied to DC. |
| Lab Techniques | 2 | Soldering, utilization of signal generators, test meters, and oscilloscopes. |
| Computer Fundamentals | 2 | Overview of computer history, basic architecture, mathematics, and logic. |
| Technical Communications | 2 | Written and oral presentation of technical information. |
| Technical Math I | 2 | Basic algebra, number systems, and Boolean algebra. |
| **TERM II** | | |
| Basic Electricity II | 2 | Magnetism, AC applications, transformers, inductors, capacitors, combination circuits. |
| Instruments & Measurements | 2 | Advanced use of test instruments and their effect on circuits. |
| Digital Circuits | 2 | Theory and operation of semiconductor logic families and circuits. |
| Microprocessors I | 2 | Architecture and machine language programming of microprocessors. |
| Technical Math II | 2 | Trigonometry, logarithms, and simultaneous equations with electronic applications. |
| Human Relations | 2 | Attitudes, values, and behaviors of self, others, and institutions. |
| **TERM III** | | |
| Analog Circuits | 4 | Theory and operation of solid state devices as applied to voltage and power amplifiers. |
| Telecom. Fundamentals | 2 | Fundamental concepts and principles of digital and analog communications. |
| Microprocessors II | 2 | Hardware/software techniques for microprocessor input/output of data, interrupt timing. |
| PC Programming | 2 | Data processing concepts, DOS, programming in BASIC and AutoCAD. |
| UTC Physics I | 2 | Problems in electrical, mechanical, fluidal, and thermal systems. |
| **TERM IV** | | |
| Power Systems | 2 | Unregulated and regulated power supplies, distribution, safety, electro-static discharge. |
| Digital Telecommunications | 2 | Communication lines, channel capacity, network topologies, and line protocols. |
| PC Maintenance | 2 | Maintenance and troubleshooting of PC systems including magnetic disk, tape, and printers |
| Computer Programming I | 2 | Machine language programming of PC systems stressing hardware/software interdependence. |
| UTC Physics II | 3 | Lab experiments in applied physics systems, including microwave and optics. |

## ROBOTICS/AUTOMATION SPECIALITY COURSES

| | Credit Hrs | |
|---|---|---|
| **TERM V** | | |
| Robot Fundamentals | 2 | Overview of robots, FMS, CIM and sociological impacts of automated manufacturing. |
| Robot Programming | 2 | Machine language programming of robots stressing mathematical relationships. |
| Industrial Circuit Design | 2 | Sensors, motor control, electromechanical, ladder diagrams, introduction to PLCs. |
| Drafting | 2 | Sketching and interpretation of electrical, mechanical and hydraulic diagrams. CAD |
| Microelectronics | 3 | Bias stabilization and AC analysis of bipolar and FET amplifiers, op-amps, thyristors. |
| **TERM VI** | | |
| Robot Controllers I | 2 | Analysis and troubleshooting of robot controllers, stepper, servo, and lvdt feedback |
| Robot Programming II | 2 | High level programming concepts using vendor specific industrial robot languages. |
| Automation Technology | 2 | Hardwiring PLCs, robot I/O interfaces, CNC programming, concepts of FMS and CIM. |
| Robotics Lab | 3 | Industrial robot safety, operation, disassembly and recalibration of a harmonic drive. |
| Occupational Communications | 2 | Goal setting, career planning, business letters and associated forms. |
| **TERM VII** | | |
| Object Recognition | 2 | Conversion of light to analog/digital information, video cameras, machine vision. |
| Manufacturing Processes | 2 | Overview of manufacturing processes, automated assembly, advanced PLC instructions. |
| Robot Controllers II | 2 | Analysis of industrial robot controllers including scoping of closed loop feedback. |
| Industrial Networks | 2 | Transmission media, communication standards, protocols in CIM environments, MAP TOP. |
| Robotics Systems Lab | 3 | Implementation of automated production system, product design, fixturing, hardwiring. |

## WHAT QUALIFICATIONS ARE NEEDED TO ENTER THESE PROGRAMS?

The qualifications to enter these programs vary depending on a student's planned course of study. The qualifications may include transcripts from high school or other colleges, or previous electronic training. A matriculation specialist is available to answer questions concerning entry requirements.

## WHAT ARE THE FEES?

Tuition is $36 per credit hour for Iowa residents and $54 per credit hour for out-of-state residents. Books, insurance, and acitivity fees are additional.

## IS FINANCIAL AID AVAILABLE?

Financial aid is available to qualified students through: (a) scholarships (b) grants (c) loans (d) work-study (e) veterans benefits (f) vocational rehabilitation (g) JTPA (h) economic development retraining (i) special needs-based allowances.

## HOW DO I APPLY?

Call, write or stop in to visit with:
Brenda Ragen
Matriculation Specialist
Indian Hills Community College
Building #58, Industrial Airport
Ottumwa, Iowa 52501
Phone: (515) 683-5201

# INDIAN HILLS COMMUNITY COLLEGE

# FLEXIBLE TRAINING IN ADVANCED TECHNOLOGIES

- Individual Courses to Upgrade Your Skills
- Certificate in Personal Computing
- Custom Tailored AGS Degrees in Advanced Technology

Indian Hills Community College

Airport Campus
Ottumwa, Iowa 52501

Cooperative Demonstration Project

**INDIAN HILLS COMMUNITY COLLEGE**
**OTTUMWA CAMPUS**
525 Grandview
Ottumwa, Iowa 52501



NEW IHCC ADVANCED TECHNOLOGY CENTER

# WHAT'S YOUR FUTURE IN ADVANCED TECHNOLOGY?

*The sky is the limit! The field of Advanced Technology is constantly changing. It's full of challenges and rewards. The need for competent, confident, career-minded technicians is rapidly increasing. Advanced Technology training can greatly assist you in making it to the top in your career.*

## MULTIPLE OPTIONS:

**Individual Courses to Upgrade Your Skill...**
This option offers adults college credit in second year High Technology programs on an individual course basis. The evening courses offered will allow current employees of industry to upgrade skills or train for new responsibilities that would enhance their mobility and productivity in their current job.

**Certificate in Personal Computing...**
This is a 21 semester-hour program in the use of Personal Computers. This option can be utilized as a first year program for students seeking proficiency in the latest software applications. Graduates will receive a certificate. It can also be a second year program for individuals who have completed our High Technology CORE curriculum, or for those who have gained equivalent experience through another school (evaluated by transcript or testing) and are seeking an Associate of General Studies (AGS) degree in Personal Computing.

**Custom Tailored AGS Degrees in Advanced Technology...**
This is a second year program for students who have successfully completed our High Technology CORE curriculum or those who have gained equivalent experience through another school (evaluated by transcript or testing). Upon completion of at least 24 credit hours of course work, a student will earn an Associate of General Studies (AGS) degree in Advanced Technology with an emphasis in a wide variety of specialty options. With the assistance of an academic advisor and an advisor from the ranks of area industry, the student can tailor an AGS program to meet the needs of area industries. Each student's individual AGS in Advanced Technology plan will be subject to IHCC Academic Standards Committee approval prior to the start of course work.

## SPECIAL FEATURES:

**Industrial Equipment...**
Because of "hands-on" training with industrial equipment, many employers consider our graduates to have the equivalent of six months of on-the-job training.

**Independent Study...**
Some of this course work will be facilitated and self-paced, greatly increasing the flexibility of hours spent in the classroom.

**Evening Hours...**
Persons working during the day or on irregular schedule will be able to enroll in evening classes.

**Credit Toward AAS Degrees...**
Credits earned by completing High Technology courses can be applied to an Associate of Applied Science (AAS) degree in Robotics/Automation, Laser/Electro-Optics, Electronics/Telecommunications, or Computer Systems/Networks.

**New "Advanced Technology Center"...**
Students will complete their training in our new state-of-the-art $6.5 million "Advanced Technology Center; one of the largest community college facilities in the nation

**WHAT QUALIFICATIONS ARE NEEDED TO ENTER THIS PROGRAM?**
The qualifications to enter these programs vary depending on a student's planned course of study. The qualifications may include transcripts from high school or other colleges, or previous electronic training. A matriculation specialist is available to answer questions concerning entry requirements.

**WHAT ARE THE FEES?**
Tuition is $36 per semester credit hour for Iowa residents and $54 per semester credit hour for out-of-state residents. Books, insurance, and activity fees are additional.

**IS FINANCIAL AID AVAILABLE?**
Financial aid is available to qualified students through: (a) scholarships (b) grants (c) loans (d) work-study (e) veterans benefits (f) vocational rehabilitation (g) JTPA (h) economic development retraining (i) special needs-based allowances.

**HOW DO I APPLY?**
Call, write, or stop in to visit with:

Brenda Ragen
Matriculation Specialist
Indian Hills Community College
Building #58, Airport Campus
Ottumwa, IA 52501
Phone: (515) 683-5201

This project partially funded (67%) by United States Department of Education Cooperative Demonstration Grant #V199A00095 in the amount of $303,012

# "NONTRADITIONAL" TRAINING

# IN

# ADVANCED TECHNOLOGIES

## INDIAN HILLS COMMUNITY COLLEGE

### NEW OPTIONS IN EVENING CREDIT OFFERINGS

| | |
|---|---|
| COURSE BY COURSE SKILLS UPGRADING..... | For industry people seeking insights into the latest technology |
| CERTIFICATE IN PERSONAL COMPUTING..... | A 21 semester hour program for those wishing to become proficient in the use of P.C. software |
| A.G.S. DEGREE IN APPLIED TECHNOLOGY..... | For those with previous electronic training or experience who wish to specialize their training for local industry. |

FOR DETAILS ON FINANCIAL AID, ENTRY REQUIREMENTS, AND INDIVIDUALIZED SCHEDULING CALL

Brenda Ragen at

(515) 683-5201 OR STOP IN FOR A TOUR

AIRPORT CAMPUS, OTTUMWA, IA 52501

United States Department of Education Cooperative Demonstration Project #V199A00095

# *FLEXIBLE TRAINING*

IN

# *ADVANCED TECHNOLOGIES*

*INDIAN HILLS COMMUNITY COLLEGE*

*NEW EVENING CREDIT*
**OFFERINGS**

| | |
|---|---|
| **COURSE BY COURSE SKILLS UPGRADING** | **For industry people seeking insights into the latest technology** |
| **CERTIFICATE IN PERSONAL COMPUTING** | **A 21 semester hour program for proficiency in the use of P.C. software** |
| **A.G.S. DEGREE IN ADVANCED TECHNOLOGY** | **For those with previous electronic training who wish to specialize for local industry** |

**For details on Financial Aid, Entry Requirements, and Individualized Scheduling call**

**Brenda Ragen at**
**(515) 683-5201 or stop in for a tour**
**Airport Campus, Ottumwa, IA 52501**

**United States Department of Education Cooperative Demonstration Project #V199A00095**
**67% federally funded at $303,012.**

*You are cordially invited to attend the*

# *Cooperative Demonstration Project*
## *Information Dissemination Workshop*

*Monday, October 22, 1990*
*8:30 - 11:00 A.M.*
*(Coffee & Donuts 8-8:30 A.M.)*

*Advanced Technology Center*
*Ottumwa Campus*
*Indian Hills Community College*

*This workshop is intended to bring you up-to-date on the features and objectives of this national demonstration project.*
*(Room No. will be posted)*

*RSVP Sherie Bauman at (515) 683-5201 by October 17th*

COOPERATIVE DEMONSTRATION PROJECT
Information Dissemination Workshop Agenda

Monday, October 22, 1990
8:30 - 11:00 A.M.
(Coffee & Donuts 8-8:30 A.M.)

| | | |
|---|---|---|
| I. | OVERVIEW OF GRANT | Curt Bloomquist, Project Supervisor |
| II. | EXPLANATION OF COMPONENT | Lee Pulis, Project Coordinator |
| | A. AGS Degree | |
| | B. Microcomputer Specialist | |
| | C. Course by Course | |
| III. | GRANT ASSISTANCE REPORT | Vicki Brown |
| IV. | SUPPORT STAFF REPORTS | |
| | A. Matriculation Specialist | Brenda Ragen |
| | B. Course Development | Rassoul Dastmozd<br>Lisa Decker |
| | 1. High Tech<br>2. Microcomputing | |
| | C. Facilitators | Stan Vittetoe<br>Dennis Robinson<br>James Waldeck |
| | D. Lab Technician | Pat Berger |
| | E. Subject Matter Experts | Morris Frisbie<br>(Ray Ryon) |
| V. | GRANT STUDENTS | Ken Bone<br>Connie Glick<br>Viki Martin |

**Cooperative Demonstration Project**
**Regional Dissemination Workshop**
**October 22, 1990**

Workshop Invitation List

AREA BUSINESSES

Ottumwa

Data Preparation
Programmers Association
Meyers Computers
Computerland
Radio Shack
Bailey Office Supplies
Deere Employees Credit Union
Accounting Associates
Chamber of Commerce
GOALMC
Mayor
KTVO
Norwest Bank
Everco
Excel
Iowa Southern Utilities
Heartland Lysine
Ottumwa School Superintendent
Cargill
John Deere
Ottumwa Courier
Softactics

Centerville

KMGO
VisKase
Rubbermaid
Young Radiator

Fairfield

Cablesoft
KIIK
Fairfield Ledger
Creative Edge
Electronic Specialties
Glazor Electronics
Louis Rich
Oskaloosa Engineering & Manufacturing
Rockwell

Keokuk

Hubinger

Cedar Falls

Iowa Falls Tech

Iowa City

University of Iowa Hospitals & Clinics

**COOPERATIVE DEMONSTRATION PROJECT**
**Regional Dissemination Workshop**
**October 22, 1990**

Invitation List

IHCC LISTING

Lyle Hellyer
Ben Halupnik
Chick Lawson
Dave Knauer
Bob Morrissey
Curt Bloomquist
Teri Lancaster
Dave Kirchner
Jim Lindenmayer
Bob Wells
Darlas Shocklay
Rick Northup
Robert Thomas
Ron Oswalt
Ann Aulwes
Bob Allison
Ed Binder
Frank Schiros
Kelly Conrad
Randy Anderson
Joan Rourke
Steve Mosena
Rhonda Eakins
Linda Mace
Jean Knowles
Bill Bagley
Mary Stewart
Ray Ryon
Steve Allison
Vicki Brown
Gary Dill
Laura Mosena
John Vandello
John Schoolen
Don Dahl
Don Job
Bill Hansen
Jane Sapp
Ramona Archer
Jane Hicks
Bill Dell
Sister Mary Ruth Morris
Sheri Heisdorffer
Donna Van Zante
Jerry Deere
Rassoul Dastmozd
Stan Vittetoe
James Waldeck
Dennis Robinson
Dick Sharp
Keveen Krieger
Marilyn Runnells
Alfred Post
Joan Pulis
Sue Culbertson
Judy Brickey
John Sauer
Roger Cox
John Tracey
Ginny Sutton
Ann Griffin

## APPENDIX B

## EXTERNAL EVALUATOR REPORT

FINAL REPORT FOR
INDIAN HILLS COMMUNITY COLLEGE
COOPERATIVE DEMONSTRATION PROJECT

This formative report is based on discussions with Curt Bloomquist, Vicki Brown, Brenda Regan, Denny Robinson and selected students who participated in the Cooperative Demonstration Project curricula. The evaluator expresses his appreciation for the time, courtesy and preparation evidenced by the professional staff who participated in the interviews. The role of the outside evaluator is indicated page 19 of the Grant as: 1) determine relevancy, currency and validity; 2) the degree to which project objectives are met, 3) the degree to which College strategies to meet objectives were appropriate and effective, 4) if needs of all students were met, and 5) if academic and federal standards have been adhered to.

The remaining sections of this report will be centered about the process objectives identified on pages 12 and 13 of the project application.

Design of a Three Component High Technology Program

In response to this process objective, Indian Hills Community College has initiated three self-paced programs provided through facilitated instruction during late afternoon and evening hours. The first program area provides for a second year based on the IHCC High Tech Core Curriculum leading to an Associate in Applied Science. While provision is made for suitable work experience equivalence to the IHCC High Tech Core, it does not appear that currently enrolled students have used this option.

The second program area provides for an offering in personal computing. This component may either be utilized as a first year program or may be a second year option for students who have completed the High Tech Core. Students completing the first year program of study are prepared to become

microcomputer specialists, while those completing the second year earn an Associate in General Studies in the microcomputer field.

The third program area is not degree oriented but allows for students to complete high technology courses as needed to prepare for employment in industry or upgrade their skills to enhance mobility and productivity in current employment settings.

These three programs areas are currently offered by the College and their availability is enhanced by offering educational experiences during late afternoons and evenings. In addition, students may pursue objectives at their own pace and are assisted by a course facilitator.

Process Objective 2: Development of Personal Computer Courses

Courses have been developed to meet this Grant requirement. Course include topics such as, An Overview of the Operating System, Fundamentals of Operating System Commands, File Management, Customizing the System, etc. These courses were developed in consultation with existing faculty and representatives from business and industry. The course work developed contains both unit and specific objectives, as well as reading assignments and evaluation activities. The objectives and assignments follow appropriate educational pedagogy. Content of the units appears to be appropriate particularly in light of their development in consultation with a business and industry advisory council.

Process Objective 3: Recruit, Employ and Prepare Staff Needed

Appropriate staff were hired, oriented and appear to be functioning in the best interest of the institution and the student. The evaluator met with the matriculation specialist and an education facilitator. Both appeared knowledgeable of institutional procedures, a commitment to goals of the

project, and expressed a sincere concern for regular student progress through the educational programs.

Process Objective 4: Offer Outreach Efforts and Conduct an Assessment of Possible Program Participants

The project and program offerings were advertised in the following local newspapers: Albia, Bloomfield, Centerville, Fairfield, Oskaloosa, and Ottumwa. In addition, College avenues of distributing information were utilized to students, counselors, and faculty. The number of individuals contacted through these means is unavailable. However, 66 students were enrolled in the Cooperative Demonstration Project. The evaluator would note that it is difficult to market new concepts to potential students, particularly students of the non-traditional nature, e.g., men and women who are older and have been out of school for a period of time and are possibly employed on a full-time basis or single parents. The newness of the program, as well as the requirement in some instances that students would need to have completed the basic core, may have to some extent diminished the potential pool. In any case, advertisement for most programs of an innovative nature take a period of time because usually students find out about a program from other students who have completed the experience. This statement does not diminish the need to appropriately advertise as the College has done, but more to suggest that enrollments on a sustaining basis may take place as individuals complete the various program options and report to their peers.

Process Objective 5: Recruit and Train Volunteer Advisors

In appears that the majority of work with the volunteer advisors was in the development of the personal computing curriculum, identification of appropriate course work for the Associate in General Studies, and suggestions

for the course-by-course approach to provide for entry level skills and skill upgrading. The advisors do not appear to be used on a regular basis to work with students as they pursue their program. I think the development of flexible curricula is an appropriate role for "volunteer advisors". Normal programmatic concerns of students and progress in an academic program should be the role of educational facilitators, matriculation specialists, and regular College faculty. I would consider this goal to be met in that the industry advisors assisted in developing curriculum. It does not appear that the advisors are used as ongoing consultants for program participants and perhaps this latter role is not necessary.

Process Objectives 6 and 7: Student Recruitment and Guidance

Both of these process objectives deal with the assignment of students to the various program options as well as to the assignment of students who might avail themselves of offerings but not qualify for the project. Data provided by Mr. Robinson indicate that 12 students are currently enrolled in the Associate in General Studies area, 30 students are enrolled in the course-by-course area, and 22 students are currently enrolled in the PC diploma program. Similar data provided by Ms. Brown indicate that 66 students are currently enrolled in the Cooperative Demonstration II Project. Of the 66 students enrolled, 44 are women. Of the 36 students that have received assistance from the Cooperative Demonstration II Project, 30 are women and 6 are men. On an overall basis, it appears that the process objectives relating to students qualifying for the Cooperative Demonstration II Project have been met. A minor discrepancy rises in the case of the Associate in General Studies program area in that 12 students are enrolled while 15 were identified in the original project application. However, this is more than offset by enrollments in the course-by-course offerings and the PC diploma.

In totalling Process Objectives 6 and 7, it appears that 100 students could have been accommodated and currently 66 are enrolled. It is, however, difficult to ascertain exact enrollments since many students participate in the course-by-course enrollment on a interim basis, e.g., they enroll one term but not the next or skip the first term and have enrolled in the second. A larger problem exists from the second process objective which specifies that 40 students not qualifying for project funding would be guided to appropriate learning experiences. Given limitations of funding for the appropriate number of staff, and perhaps more important the lack of decision as to whether to continue the activity, additional students have not been assigned to the evening facilitative sessions. In a discussion regarding potential student recruitment with the matriculation specialist, it appears that students are calling for information and have indicated an interest, but that there has been a reluctance on the part of project staff to enroll students since the decision to continue or defer the program has not been made. It would appear that with weekly requests regarding enrollment information for the evening program, this effort could be self-sustaining if the College wishes to continue the program.

Process Objective 8: Deliver a Self-Paced Competency Based Program

It appears that Cooperative Demonstration Project II improves upon the first funded effort. Discussions with students and other individuals identified at the beginning of this report indicate that the first year of operation was a very compressed program offering. This made it difficult for students who might have been engaged in full-time employment to devote sufficient time to their studies. In any event, it appears that the self-paced competency based facilitative program has been implemented and appears to be working well. Interviewed students indicated that it provided them

flexibility in terms of planning their schedules to participate in program experiences while at the same time allowing flexibility to plan around family or work emergencies. It appears that tests regarding student achievement are the same for both day and evening programs where similar programs are in fact offered. There appears to be no difference in student achievement as measured by common examinations. Based on my limited interviews with students and concerned facilitators, it would appear that it is a combination of evening offerings, competency-based curriculum and facilitation which are the necessary components of the program.

Process Objective 9: Graduation and Placement

This component was not evaluated in the formative evaluation phase. However, a caution is offered in that placement in the traditional sense may not apply to these kinds of programs or the students being served. In many cases, students are already employed and are pursuing the course-by-course option or even in the case of the PC or AGS options they are currently employed and seeking to either upgrade skills or obtain a degree for personal satisfaction. One of the interviewed students was enthused about the learning experiences and felt qualified to work in the PC field but indicated that employment opportunities if not in the immediate geographic area would involve familial considerations. It may present a case where there is a qualified graduate, but because of a spouse's job, the graduate would not be free to move to another area. While graduate and placement information obviously needs to be collected, a further examination of student motivation may add to the richness of data that can be used to assess this project. In same cases it may be that students have enrolled because they wish to upgrade skills and in other cases they may be enrolling based on future employment plans indicating a need for flexibility. Graduation rates might also be skewed

given the part-time nature of the program and the relatively short duration of the project.

Given the expressed limitations, follow-up information obtained from IHCC is presented below.

Follow-up Information

| | Microcomputer Specialist | Course by Course | AGS Option |
|---|---|---|---|
| Employed | 6 | 14 | 7 |
| Continuing Education | 8 | 11 | 2 |
| Military | 1 | 1 | 0 |
| Withdrew | 6 | 3 | 1 |
| Status Not know | 1 | 1 | 2(1) |
| | 22 | 30 | 12 |

(1) One individual has completed degree requirements and is currently seeking employment.

## SUMMARY

All project objectives have have been met. The project has met the objectives of developing curricula, providing offerings for non-traditional students, particularly women, and has made course work available in the evening through the competency based, self-paced facilitative learning format.

Given a declining or at best stable high school population from which to draw, it would appear that institutional enrollments can be maintained by serving a clientele interested in pursuing evening options. Moreover, as one looks at the "graying" of the Iowa population as well as the philosophy of the institution to serve varying constituencies it would appear that the non-

traditional adult and women should be cultivated in terms of institutional offerings. The model demonstrated through the federally funded project appears to be a viable method for Indian Hills Community College to extend its services. Moreover, it appears to embody not only the philosophy of the community college, but that of education in general in meeting student needs, based on maturation and interest. While lip service has been paid to these later aspects, it appears that the demonstration project has made major strides in meeting our often expressed philosophy.

While many institutions offer evening sections of programs, some of which are competency based, few have attempted to demonstrate the competency based facilitative learning format developed and initiated in this project. It would appear that the project had demonstrated what it originally set out to do and that successful completion of the project has major implications for continuing programming at the institution. I am hopeful that the services can be offered on a continuing bases if cost effectiveness can be established.

Interviews with selected full-time faculty indicate support for continuing activities initiated in Cooperative Demonstration Projects I and II. Suggestions for improvement were directed to 1) more involvement of full-time faculty, 2) continued refinement of the facilitative learning package, and 3) use of the physical facility to further accommodate part-time evening learners, particularly Friday evenings. Consideration should be given to additional compensation for instructors so involved.

Respectfully submitted,

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CR/kb